Printing Industry
Advisory
Committee

Safety in newspaper production

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Preface

This is the first comprehensive report on safety in newspaper production prepared on a tripartite basis. It is the working party's opinion that the Printing Industry Advisory Committee should, after a period, review these recommendations in the light of operating experience.

In this report the word 'must' is used to indicate a mandatory or legal requirement. The word 'should' is used where the working party consider that the provision is necessary and feasible, and although not required by specific legal requirements could be interpreted as necessary under Section 2 of the Health and Safety at Work etc Act and other legislation. Where a section of the code is advisory, the word 'recommended' or 'may' is used.

In this report the term 'reasonably practicable' means feasible, taking into account the degree of risk and the cost of averting that risk. Further explanation may be found in the many court judgements in which the term has been interpreted.

In this report the term 'practicable' means technically possible with little or no regard to cost.

Introduction

1 This report has been produced by the Working Party on Safety in Newspaper Production of the Printing Industry Advisory Committee. The Printing Industry Advisory Committee was formed in August 1979 by the Health and Safety Commission and its function is to report and make recommendations to the Health and Safety Commission on occupational health and safety issues related to the printing industry.

2 The recommendations in this report are made by people with practical as well as technical and legal experience of the industry and have been endorsed by the Printing Industry Advisory Committee. They are made with the intention of assisting management, employees, inspectors and machinery designers and others in the task of preventing injuries and accidents to workers in the newspaper industry.

3 It is intended that the recommendations will be incorporated in all plants in the design stage. Equipment suppliers will play an important part in this aim.

4 Items marked with a circle ● are intended for new installations only. Where reasonably practicable this should include installation of second hand newspaper presses and those new presses taken from store.

5 At existing plants certain items marked with a square ■ may, because of the cost or disruption caused, be incorporated over a time to be agreed which is no longer than seven years from the date of publication of this report. All other items except those marked ● should be incorporated as soon as possible, and in no case longer than two years. There are however some cases where presses and plants are too old, or their expected life is too short to make major modifications feasible.

6 This report does not deal with all safety situations in every newspaper house, it is an attempt to give guidance in areas where members feel that it will be of assistance. Consideration should always be given to the relevant parts of the HSW Act; the Factories Act, and to British Standard 5304/1975 : *Safeguarding of machinery*, and other publications – see Appendix 1.

7 The HSW Act Section 2, requires every employer to ensure so far as is reasonably practicable the health, safety and welfare at work of all employees. The duty extends to the:

(a) provision and maintenance of safe plant and systems of work;
(b) arrangements for using, handling, storing and transporting machinery, materials and substances;
(c) provision of information, instruction, training and supervision;
(d) provision of safe places of work and access to them, and adequate welfare facilities.

8 The Factories Act 1961 is still in existence and applies to all newspaper printing plants. Its requirements are not diminished by the HSW Act. Many of its requirements are not qualified by the phrase 'so far as is reasonably practicable', for example, where the duty to securely fence (guard) dangerous parts of machinery exists, the obligation is absolute. This has been interpreted by the courts as requiring guarding where injury is reasonably foreseeable. The duty cannot be discharged by warning the operator or anyone else likely to be affected, and the duty extends to protect the operator even during moments of carelessness or inattention. Ideally machines should be so guarded that injury is prevented without interference with production, but sometimes this is not easy or even possible particularly when guards have to be designed to fit an existing machine.

9 Section 6 of the HSW Act lays an obligation on a manufacturer, importer or supplier to ensure that any machine supplied for use at work is as safe and free from risks to health as reasonably practicable. When purchasing machinery the user should ensure that this obligation has been met and that for example, the machine is guarded properly and its controls labelled clearly. The manufacturer or supplier must also provide adequate information regarding the safe use of the machine. Section 6 also applies to the supply of chemicals and substances.

10 Under Sections 3 and 4 of the HSW Act, contractors visiting and working on premises have a duty to ensure that their activities do not endanger other persons. Likewise employers and persons who have the control over premises have duties towards contractors' employees. Therefore employers are to some extent obliged to oversee the work of contractors.

11 Under Section 7 of the HSW Act, a duty is laid on every employee to take reasonable care for the health and safety of himself and others and to co-operate with his employer to enable him to comply with any duty or requirement imposed upon him. Section 8 states that no-one shall intentionally or recklessly interfere with or misuse anything provided in the interests of safety, such as a guard.

12 The Safety Representatives and Safety Committees Regulations 1976 made under the HSW Act enable recognised trade unions to appoint safety representatives, and also require employers to set up safety committees where two or more appointed safety representatives ask for this. Safety representatives are given the right to paid time off for training and to carry out their functions which include undertaking periodic inspections of the workplace, investigating accidents, dangerous occurrences, cases of industrial disease and complaints from persons they represent in the workplace. Safety representatives are also given the right of access to relevant information (including information about new plants) and documents concerning health and safety and to information from inspectors.

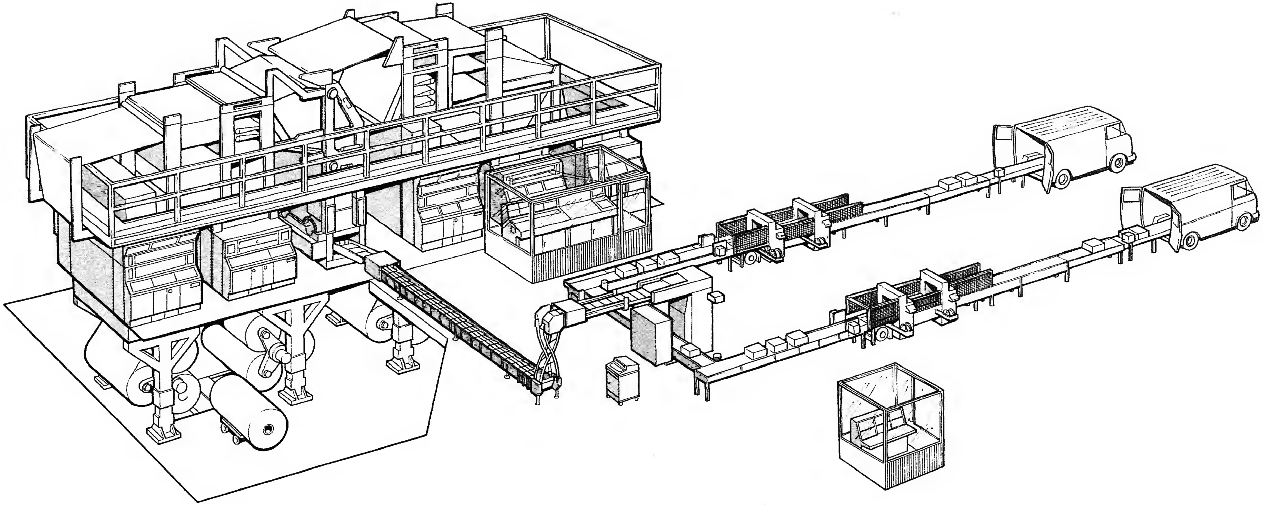


Fig 1 Newspaper production – printing and publishing room operations

Scope

13 This report contains recommendations which apply to plants where newspapers are produced.

14 A newspaper may be defined as a product that is printed and distributed daily, weekly or at some regular short interval and which contains news, articles of opinion, features, advertising or items of local interest. A newspaper is produced to a deadline and has little or no value the day after its publication date. Included in the definition are all local weekly newspapers and most advertising free sheets which contain news items. This report is confined to newspaper production processes. A glossary of some terms used in the printing industry is given in Appendix 2.

Description of newspaper production

15 It is considered that it would be helpful to give a brief description of the general production methods of newspapers for the assistance of newcomers and also to help define some of the terms which are used in this report.

16 Common to all methods of producing newspapers is the preparation of printing plates. Such plates may be smooth (finely etched) as in the lithographic process (web offset or di-litho conversions), or with a surface in deep relief as in the various letterpress processes. This report does not deal with the gravure process.

17 Prior to platemaking each page of the newspaper is composed, either manually with the aid of type setting machines or by photocomposing techniques with or without the aid of computers.

Letterpress with conventional hot metal stereos

18 If manual methods are used there will be many stages to the process in which various metal cutting, planing and sawing machines will be used. Whatever composing and page layout method is used the result will be a forme with a negative image set in relief from which proofs can be printed. This forme made of type metal, magnesium, zinc or plastics is then used to mould a papier-mache flong which carries a positive image of the page in relief and which is placed in a casting machine.

19 The resulting curved metal stereo plate is machined so that it can be fitted and secured to the press plate cylinder. The metal stereo plates are taken to the machine room with the aid of trolleys or powered conveyors, or manually. Two methods of securing the plates to the plate cylinders of the presses are used: compression lock up in which dovetail-shaped 'dogs' clamp the plate on its mitred edges onto the cylinder, and tension lock-up in which claws engage with slots milled on the underside of the plate.

Litho

20 Litho printing plates in the lithographic process consist of aluminium sheets which are chemically and photographically treated. There are few mechanical processes other than trimming and bending. Plates are secured to the press cylinders within lock up slots by mechanical or pneumatic means, or in the case of di-litho using saddles.

Other processes

21 Plastics polymer plates may have a backing of thin aluminium, steel or fibre sheet with an image suitable for letterpress printing composed of a hard plastics material. This is usually formed by selectively curing (hardening) a liquid polymer and then removing any remaining uncured liquid polymer leaving a surface in relief. Polymer plates may be mounted directly on the plate cylinder or on a saddle which is in turn mounted on the cylinder. Saddles are often used on letterpress machines converted to run with polymer plates.

Printing

22 Usually before the press is fitted with plates it is webbed up. The paper web may be threaded through the various rollers, cylinders and bars of the press from the reel stand to the folder by a combination of manual and mechanical means. On many presses leading tapes or chains are provided which carry the leading edge of the web from the reel stand to the top of the printing unit or top of the folder. The final stage of webbing up is to lead the web through the folder and this is generally done manually. The web is fed between the propellor rollers, slitters and the RTF (roller top of former), down the former (or kite) between the free-running bending rollers or first draw rollers, through the remaining driven draw or free running rollers and through the folding and cutting cylinders to the delivery.

23 After plates have been fitted to the plate cylinders and locked up, and fudges (miniature plates) fitted to the fudge/seal device, if any, the press is started and ink flow, register, propellors and draw rollers will be adjusted as appropriate. On litho presses there will in addition be the dampening system to adjust and the water/ink balance to attain. The press may be stopped during the run to change editions, late news (fudge) or because of web breaks, in which case a partial or complete rewebbing up will be done. The stream of printed newspapers is conveyed to the publishing room by means of moving wire or gripper conveyors, often known as creepers, or taken off manually and placed in elevators (See Fig 1).

Publishing room

24 The stream of papers may be mechanically or manually transferred from the discharge point of the elevator or

conveyor to belt or roller conveyors for counting, stacking and tying or strapping. Usually mechanised means of counting and stacking are contained in a single machine and tying or strapping in another. Associated with the strappers or tyers may be an underwrapper which will automatically feed a sheet of paper to the base of the bundle or quire. Conveyors may contain diverters, bundle separators, stop gates etc to regulate the flow of bundles into the strapping machine or tyer. Often both the counter and stacker and the conveyor feeding it are mechanically or electrically connected to the press. Publishing rooms may contain other equipment including small tyers, shrink wrappers, and wrapping machines for air mail distribution.

Materials handling

25 Reels of paper are brought to the plant usually by road transport and unloaded manually or by mechanical handling equipment (usually a clamp truck). Several means may be provided for transferring the reel to the store which is often on another level. Reels may be stored horizontally up to three layers high, or on end. Clamp trucks, forklift trucks, floor conveyors, bogies or manual methods may be used to transfer the reels to the machine or magazine room where the reels are unwrapped (stripped) although this may be done in the reel store. Reels are then transferred to the reel stand of the presses. At the other end of the process, bundles of newspapers are loaded into vans for despatch to newsagents, railway stations or wholesalers. Vans are driven to the loading position where they are manually loaded with or without the aid of a telescopic conveyor extending into the back of each van.

Cleanliness

26 A high standard of cleaning and housekeeping must be maintained. The minimum statutory requirements are contained in Section 1 of the Factories Act 1961 which requires washing of walls and ceilings at least once in every 14 months and periodic repainting at least once every seven years. Where it suits the process coloured paint may be used to improve light reflection, reduce glare and to differentiate working areas. In the machine room a more durable surface, with sound deadening properties may be more suitable. Smoking should be discouraged in production areas (see para 153(d)).

Temperature

27 The temperature, particularly in press rooms and foundries should not be allowed to reach excessive levels. In assessing high temperature levels, account should be taken of the humidity and air movement. The Health and Safety Executive Guidance Note EH 22 *Ventilation of buildings – fresh air requirements* should be consulted in this respect. The need for exhaust ventilation to control dust and fumes must be considered separately, and should be the subject of professional advice.

28 Adequate heating must be provided in those areas requiring it, for example, the publishing room. The aim should be to minimise draughts from chutes and other openings.

Lighting

29 Adequate and suitable lighting must be provided in all parts of the plant. See references 5 to 8, Appendix 1.

30 Emergency lighting should also be provided and maintained in all appropriate areas. See reference 6, Appendix 1. The fire authority may make requirements for emergency lighting under the Fire Precautions Act 1971.

Noise

31 There should be compliance with the Code of Practice for Reducing the Exposure of Employed Persons to Noise (HMSO 1972). Further reference may be made to *Some aspects of noise and hearing loss* (HMSO 1981) see Appendix 1, references 10 to 14.

32 The code of practice is based on research into noise induced hearing loss and makes recommendations for the protection of employed persons. The first objective set out is the control of noise exposure, for example by reducing noise levels by machine enclosure and separation of noisy areas. Walls, ceilings and floors of the workplace may also need treatment to reduce reverberant sound. If, after the application of such means or of means for reducing exposure duration (for example provision of noise refuges etc), noise levels are still excessive, effective ear protection is to be provided on an individual basis and used. It is important that where ear protection is provided, it is accompanied by suitable instruction and training and that places where it ought to be used are clearly marked.

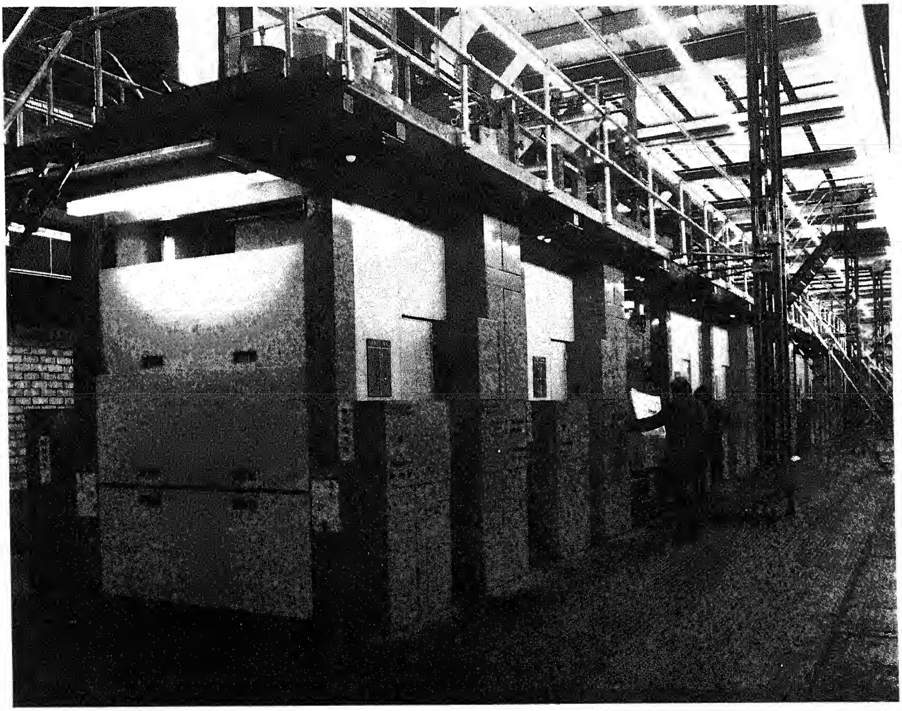


Fig 2 Press with enclosed and sound – treated units

33 The problem of noise control is a difficult one and outside the scope of this report, but members wish to record their conviction that noise reduction is of paramount importance in improving the working environment.

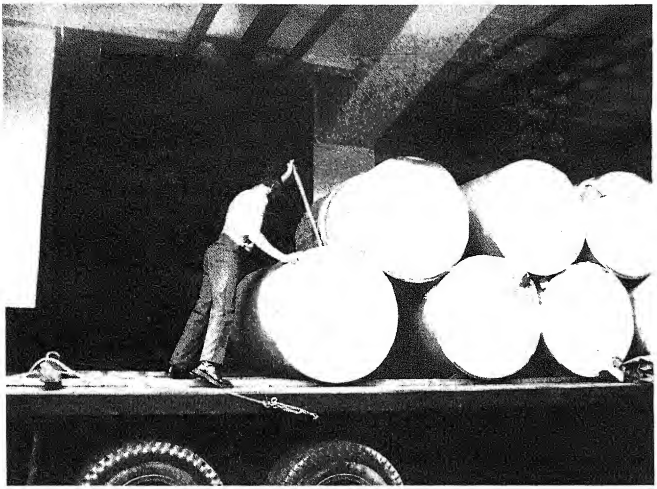
Reel handling

34 Reels of newsprint weigh up to 1 tonne and if they fall or roll out of control are liable to cause serious injury. The skill and experience of persons handling these reels should not be taken for granted. Suitable plant should be provided and training and advice on correct methods of lifting heavy loads should be available for persons who have to handle reels (See Appendix 1, Bibliography).

35 Reels are usually delivered on flat bed lorries, stacked on their side two or three rows high. If during transport end storage is used, specially designed vehicles are required. Transport by freight container creates difficulties with safe unloading if reels are stored horizontally. Reels stored horizontally on flat bed lorries may be broken down by bats or grabs, and unloaded by fork lift or clamp trucks, or slings, or by rolling off the end before being moved into the store.

36 In each case the task should be analysed to ensure that the practices adopted are the safest consistent with the layout and methods of handling. In all cases the contractor responsible for delivery should ensure that the method of loading and transport is safe and suitable for unloading at the newspaper plant concerned. This should cover adequate chocking and preslinging if appropriate. Safe arrangement should be made for different sized reels (if carried) in the same load. Loading and unloading should be done if possible with the vehicle standing on a horizontal surface.

37 The handling of reels from the transport to the storage area and into the reel stands is crucial to continued production and alternative methods are usually available in the event of the failure of one method. Assessment of safe working practices should always include the back-up method brought into use when the usual means of handling are not available.



Figs 3 & 4 Reel handling: unloading from lorries

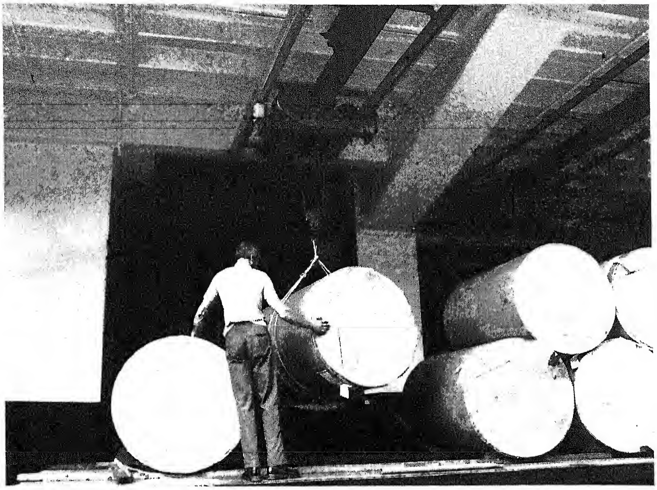


Fig 4

38 There are many variations in the methods of storage and handling of reels, but it would appear that end storage and movement by means of purpose designed clamp trucks is the most satisfactory method from a safety point of view.

Fork lift and clamp trucks

39 A considerable number of accidents occur in industry each year through the use of fork lift trucks by inadequately trained persons. It is extremely important that fork lift trucks are operated only by appointed and suitably trained drivers. A truck of the same type and fitted with an identical type of clamp if appropriate should be used in the instruction of drivers. A formal appointment scheme in writing and the issuing of driving licences are strongly recommended. Drivers to cover for absence owing to holidays or sickness should also be suitably trained. If in-house training is used the instructor should be properly trained as an instructor (not simply an experienced driver) and he should attend refresher courses (See references 19 and 20, Appendix 1).

40 From the point of view of pollution, noise and fire risk it is strongly recommended that only electric powered vehicles be used inside buildings. Charging areas should be freely ventilated.

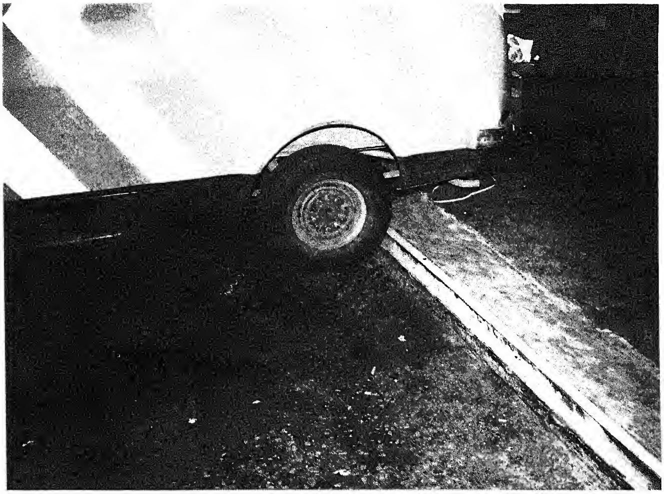


Fig 5 A wheel stop in the vanway

Vehicle movements

41 Vehicles should be adequately supervised when manoeuvring, with at least one look-out man to assist a reversing van or lorry in an internal loading bay. The layout of internal roadways, bays and parking spaces should be as safe as reasonably practicable, and should take into account the additional dangers caused by congestion and pressure to meet deadlines.

42 Pedestrians not directly engaged in the loading or unloading operation should not have to walk across roadways or bays if avoidable; alternative routes should be provided and warning signs should be posted.

43 In the van way kerbs should be installed where reasonably practicable to act as backstops for the rear wheels of reversing vans. These may be adjustable in position to cater for differing sizes of vans.

Maintenance of lifting plant

44 In addition to normal day to day inspections; thorough inspections of cranes, lifting tackle etc are required under the Factories Act 1961, and records of periodic examinations and maintenance must be kept. It is strongly recommended that all bogies and trucks used to transport reels should be examined by a competent person at least once every 12 months, and defective ones removed from service. A spot of coloured paint changed periodically is one way of denoting that an examination has been carried out. This method reduces the amount of record keeping needed. Clamp and fork lift trucks should be regularly maintained. In the case of clamp trucks, maintenance should include checks on the clamping force and the condition of clamp faces. Clamps and forks should be properly adjusted for the work being carried out.

45 Lifting mechanisms such as lifts, scissor lifts, reel hoists and lowerators can be dangerous as there are likely to be traps at many of the moving parts. These items must be specially examined and all traps must be effectively guarded. Specific advise on scissor lifts is given in British Standard BS 5323 : 1976.

46 It is strongly recommended that all plant and machinery should be subject to a formalised planned maintenance scheme. Such a scheme should include mountings for platforms and ladders, and should cover machinery involved in the back up method of bringing reels into the building (Reference para 25). On the latter point a full test of the back up method of moving reels should be carried out periodically.

Magazine floor and reel storage

47 Safety in moving reels to the reel stand should be carefully planned. Where powered floor conveyors or rail mounted bogies are used stop lock buttons should be prominently positioned and clearly marked. Powered rail mounted bogies may be provided with a trip device which disengages the drive to the bogie in the event of it meeting an obstruction (See Fig. 6).

48 At new installations and where reasonably practicable at existing installations a clearance of at least 460 mm (18 in) should be provided between moving reels on powered bogies, and stanchions, walls, machine frames and other fixed obstructions.

49 Where bogies are run onto subtrucks at the reel stands, the subtrucks should be capable of being locked in position to prevent them being moved unintentionally. (See Fig. 7). Where locks are fitted they should be used.

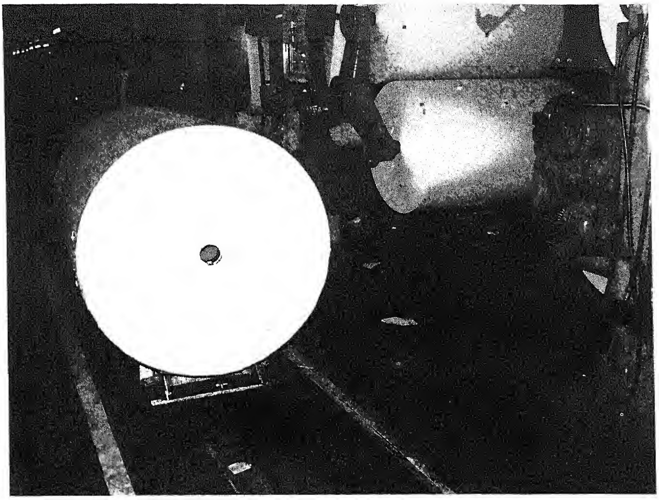


Fig 6 Powered reel bogies : trip device

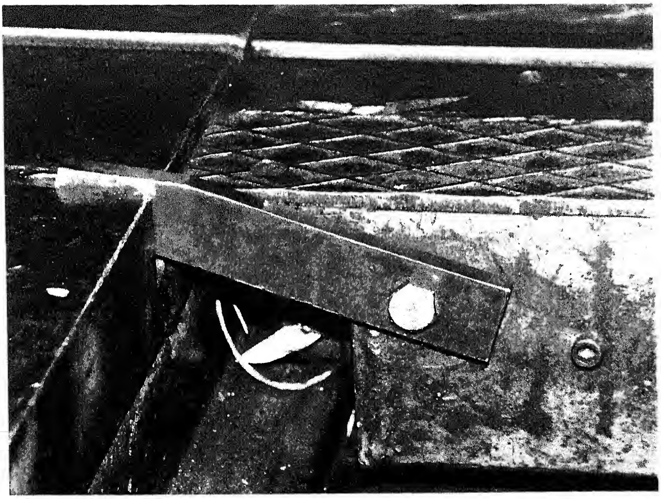


Fig 7 Latch on subtruck to prevent accidental movement

50 Means should be provided for recovering reels that have come off the subtruck or spider and fallen into the pit. Wherever practicable this should be done mechanically, for example by means of a lifting eye and suitable lifting tackle.

■51 Means should also be provided to remove partially used reels from reel stands. Special bogies or hoists may be necessary for this purpose.

52 The operating controls of reel stands should be located where there is a clear view of the working area.

53 Stop buttons of the push to lock type should be fitted to reel stands to prevent the press being started and to inhibit the automatic paste cycle to provide safety for a man working in the pit. Manual operation of the spider rotating mechanism should only be possible by means of a deadman's button, i.e. a button which has to be held depressed against the force of a spring.

●54 Reel stands should be so located that there is a minimum of 460 mm (18 in) clearance between the surface

Footnote: see paras. 4 and 5 for meaning of symbols ■ ●

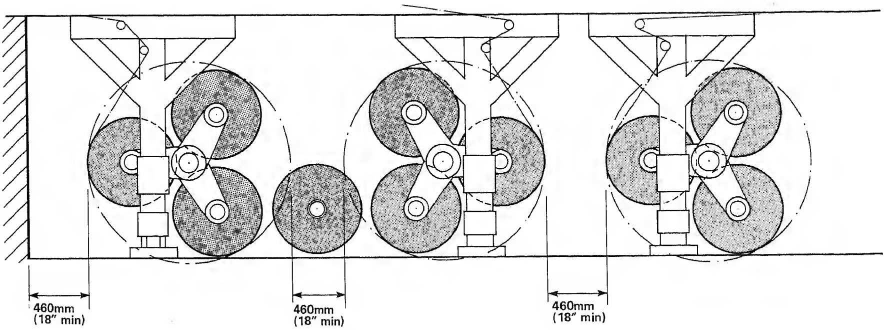


Fig 8 Reelstand clearances

of the largest reel that the stand is designed to accept, and any obstruction such as a full reel mounted on an adjacent stand or wall unless fixed barriers are provided to prevent persons reaching areas of danger.

55 Since any reel being loaded will encroach on the 460 mm gap mentioned above, reels should not be left standing on the sub trucks. There is the additional danger where an adjacent stand undergoes the automatic paste cycle. A safe system of work should be devised to prevent such occurrences.

•56 Reel loading devices involving powered bogies and/or powered sub trucks moving under automatic control, e.g. micro processor, should be examined separately to ensure a high standard of safety.

57 If running tension belts are fitted, consideration should be given to any additional danger created.

58 On presses fitted with spindles, guards or loose sleeves should be provided to protect against entanglement of clothing.

Housekeeping in the magazine room and reel store

59 Attention should be given to good housekeeping where wrappers and waste paper are removed. Bins should be provided for core plugs.

60 Spindles should not be left lying on the floor thereby creating a tripping hazard. Racks or other suitable means should be provided.

61 Where powered balers are used there is a need for . interlocks on doors.

62 Manually operated balers of the type where a lever has to be brought down to compress the bale should be phased out without delay as these can be dangerous if the lever is released and flies upwards unexpectedly.

63 Consideration should be given to the safety of the paste to be used; non flammable paste or double sided tape is preferred. The storage and use must be carefully controlled. The use of open cans and pallet knives should be discouraged, and, for example, applicators or oil cans with brushes on the end introduced.

64 Adhesives should be dispensed from proper vented dispensers. The practice of spiking holes in the top of the drums should be discouraged because such drums cannot be resealed. If flammable pastes are used, fire resisting storage cupboards or rooms to comply with the Highly Flammable Liquids Regulations should be provided and used for both full and 'empty' containers.

65 Attention should be given to the storage and transport of used or damaged reels and cores. Provision should be made for the handling of damaged reels which are being returned to the suppliers.

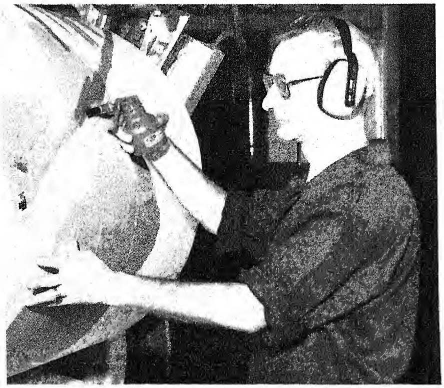


Fig 9 Reel paste applicator in use

Presses

66 Dangerous parts of presses must be guarded and this should be done in the manner most appropriate to their function and the need for access. The dangerous parts include:

(a) in-running nips between powered or web driven rollers, including inking and damping rollers;
(b) drives, gears, shafts, chains, belts and transmission parts in general;
(c) printing cylinders;
(d) folder and cutting cylinders;
(e) slitting and web guidance mechanisms.

Principal methods of guarding

Fixed guards

67 Where guards are fixed they should be secured with hexagon headed bolts or socket head screws or similar. Slotted head screws suitable for turning by coin should not be used at panels and doors etc, covering dangerous parts, and exposed electrical components.

Hinged or sliding guards

68 Hinged or sliding guards allowing access to moving parts must be kept closed at all times when the machine is running at above crawl speed. When reasonably practicable, interlocking should be used to ensure that hinged or removable guards are kept closed at such times.

69 On many small installations interlocking does not appear to cause undue operational difficulty. The working party therefore recommends that where reasonably practicable interlocking devices should be used on such presses. On the other hand, where many multi-unit presses are in use to produce a national or regional newspaper, the number of interlock switches required may be so large as to make for very serious production problems. For example, to interlock printing cylinders and roller guards at a typical large newspaper may require between 200 and 300 switches. In the present circumstances, it is not considered that this would be reasonably practicable.

70 Moreover, experience in the newspaper industry indicates that guards are almost invariably kept closed when machines are running at high speed. The number of injuries recorded at presses in motion up to the present time for newspaper publishers is small. However, in the design of new presses the possibility of incorporating practical interlocking at the design stage should be pursued.

•71 It should be a condition that if guards are not interlocked the stop controls are properly designed and installed in accordance with paras 115, 116, 117, 121, 122, 125.

72 It is also important that safe systems of work are in force backed up by suitable training and supervision. See paras 108 to 114 and 148 to 150.

73 Viewing panels in sheet metal guards will often obviate the need to remove guards, especially if supplemented by internal lighting. Panels of transparent plastics may be susceptible to scratching, dust attraction and attack by solvents. This should be borne in mind when designing guards for any particular application. Viewing panels of metal mesh may be painted matt black to aid visibility.

Nip bars

74 These should be permanently secured as for fixed guards and should be sufficiently strong to resist deflection in normal use. If damage to nip bars is likely to occur through wrap arounds following web breakage, spare nip bars should be kept as replacements. Nip bars may not be suitable where rollers or cylinders 'throw off', e.g. where an ink forme roller can be pneumatically lifted out of contact with the plate.

75 The gaps between nip bars and rollers should be as small as practicable.

Other means

76 Other equally effective means for guarding dangerous parts of presses may be provided.

Special features

Web leading-in

77 To limit the access needed by operators to rollers in motion at slow speed on larger presses, web leading-in tapes,

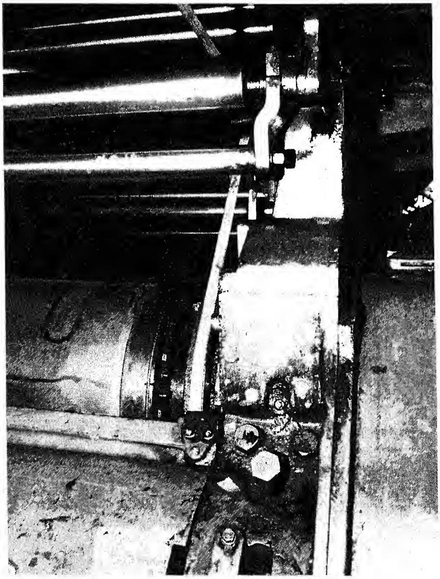


Fig 10 Press unit showing web leading in tape

chains, or similar devices should be used to the greatest practicable extent. Leading-in chains should be hand driven only. Leading-in tapes may be mechanically connected to the press (continuously running tapes or captive tapes), or motorised.

78 Leading-in tapes or chains should take the web from the magazine room (where they should be accessible without ladders or steps) completely through the press units and preferably to the top of the folder, but not including turned or 'bay window' web runs where the tapes may terminate at the prior slitter roller.

79 On small litho presses lead-in devices may not be practicable or necessary, reference should be made to para 108 (systems of work).

Inking rollers

80 In-running nips must be protected by enclosing guards or nip bars. Narrow slots may be provided in enclosing guards for the application of wash-up solvent. The width of the slot must be such that finger access to the intakes is not possible. BS 5304 Clause 10 gives permissible openings.

Damping rollers

81 The same principles apply (para 80). Consideration should be given to the need to add water directly to damping rollers.

Litho: plate, blanket and common impression cylinders

82 Hinged or sliding guards should generally be fitted and to provide additional safety during wash-up and make ready in-running nips between cylinders should be protected by nip bars where practicable. Guarding should cater for alternative web paths, if any, through the press.

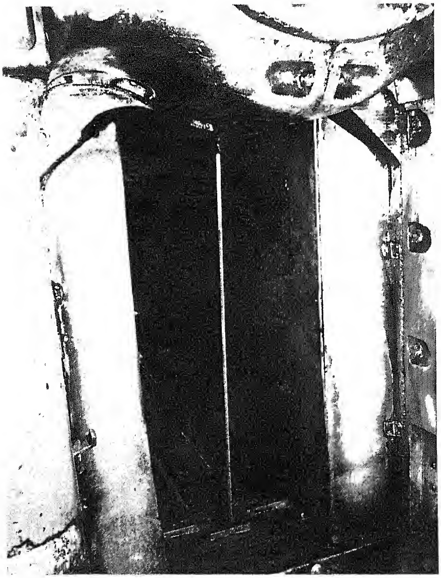


Fig 11 Guards in press unit arch

Letterpress, plate and impression cylinders

83 Nip bars are inappropriate on letterpress machines because the cylinders are not smooth. Letterpress machines should be fitted with hinged or sliding guards for the cylinders which on high speed presses using heavy plates should be capable of withstanding and containing broken fragments of printing plates.

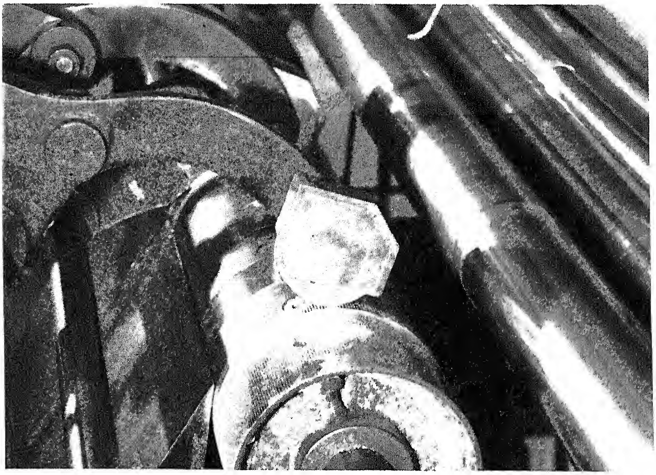


Fig 12 Propellor roller guarding

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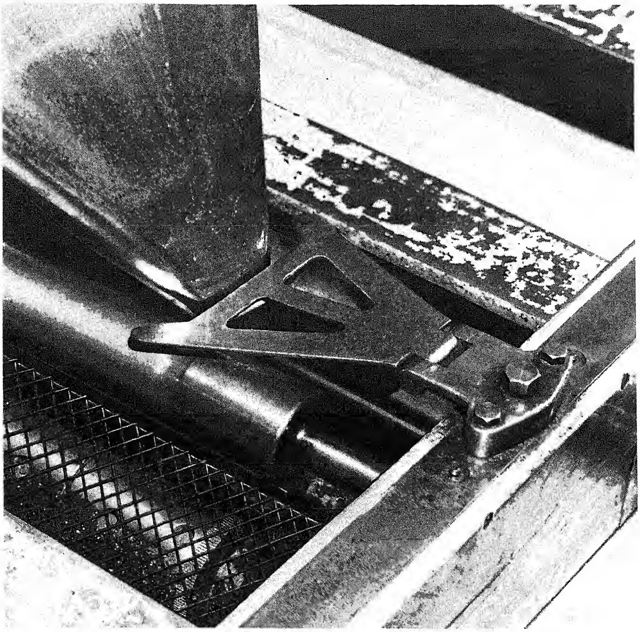


Fig 13 Nose guard on folder

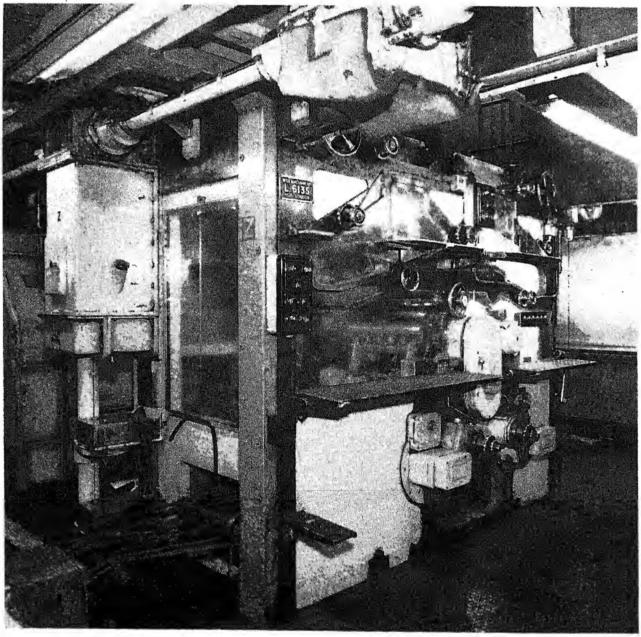


Fig 14 Folder guarding and noise enclosure

84 Any incident in which a printing plate breaks or cracks at speed should be thoroughly investigated and a report made.

Unit arch (tunnel)

●85 On new presses, access to dangerous parts including the severer within the arch must be prevented by a barrier or internal guarding. Sheet metal guarding should be provided in preference to open mesh to reduce escape of ink fly.

Slitters, propellers etc

■86 All in-running nips on slitters, propellers, driven rollers (for example the RTF), at turner bar assemblies and tops of folders must be guarded. (See Fig. 12). Guarding may be combined with dust collection hoods. Holes in the RTF for locking screws should be filled in with plugs or other suitable material, for example, plastic wood. The gap between the RTF and former should be as small as possible.

Web driven rollers and mechanically driven rollers

●87 Where a pair of separated rollers contra-rotate and create an accessible gap, nip bars should be provided unless the accessible gap is greater than 115 mm (4½ in) on new machines. On existing machines nip bars should be provided at accessible dangerous contra-rotating rollers where reasonably practicable.

Folder draw rollers, nipping rollers, folders

■88 In-running nips should be protected with nip bars or enclosing guards. Guards should not hinder the webbing up process if at all possible, because prolonging the webbing up process is likely to make it more hazardous. Guides or other devices which facilitate webbing up should be provided on new machines and, wherever reasonably practicable, on old machines. Such devices should assist the web into successive draw rollers and also into folding and cutting cylinders.

■89 Free running bending rollers do not require guarding, except for a 'nose guard' at the base of the former.

■90 Controls and locking nuts should be brought outside the framework wherever reasonably practicable. Folder guarding should not be considered in isolation from noise and dust control.

Fudge and seal units

91 These are often difficult to protect, but guards must be made as effective as possible, as many serious accidents have occurred at fudge and seal units. Sliding guards which when closed prevent access to the fudge units and impression cylinders are recommended in preference to local fudge barrel guards. Where reasonably practicable dangerous intakes within the enclosing guard should be provided with nip bars. Viewing panels and internal lights may assist operators to check ink flow without opening the guards.

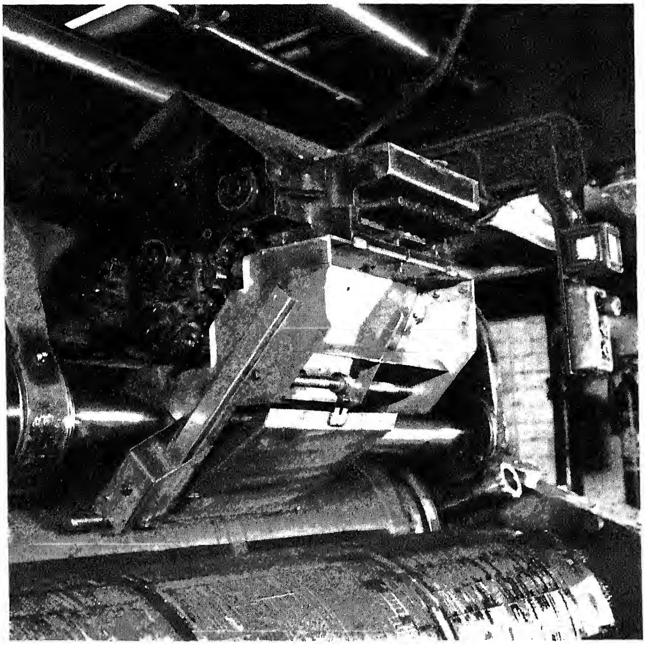


Fig 15 Fudge unit guarding

92 On existing machines fitted with local hinged guards the edge of the guard should extend as close to the impression cylinder as possible. Generally these guards should be durable and close fitting. Care should be taken to avoid creating further traps, i.e. between the guard and neighbouring moving parts.

Satellite colour units

93 The cylinders and rollers of these units must be guarded. Attention should be paid to webbing up, especially where tape or chain feed devices do not extend to the unit. See paras 108 to 110.

Delivery belts

94 Dangerous nips between the belts and pulleys should be guarded, for example, at the delivery from the folder and on the conveyors to the publishing room. No guarding is considered necessary to prevent access to wire/roller intakes at wire type (e.g. igranic) conveyors, but on overhead horizontal runs consideration should be given to installing trays to prevent broken wires from falling on persons below, and to collect falling dust and oil drips. Trays should be cleaned out regularly.

Drive shafts

95 On multilevel presses a safe system of work should be established to prevent approach to rotating parts during maintenance and repair. On presses where drive shafts are not safe by position during operation, guarding should be provided for shafts, clutches, couplings and other rotating parts.

Crawl speeds

96 Crawl (continuous inch) speed should be as low as reasonably practicable, and in the case of new presses should not exceed 10 metres per minute (m/min) (33 feet per minute (ft/min)). It is not true to say that any stated crawl speed is 'safe', merely that it is probably less dangerous than a higher speed. Any crawl speed above 10 m/min should be reviewed and the speed reduced if reasonably practicable. Where crawl speeds remain above 10 m/min a review of safe working practices on webbing up and cleaning will be particularly necessary.

Working places and means of access

97 Particular attention should be given to improving access to upper parts of the press. Where reasonably practicable, and on all new machines, adequate walkways and platforms should be provided to enable persons to work at all places where this may be necessary without undue reaching or crouching (See references 31 to 34, Appendix 1).

98 Access to elevated plant, platforms and gangways should where reasonably practicable be provided by a stairway rather than a ladder. Stairways, platforms and gangways should be provided with a handrail of adequate height and strength and with a centre rail and toeboard. The width of stairways and gangways should be sufficient to enable all operations on the press to be carried out safely. Routine operations will include cleaning, attending web breaks and routine maintenance such as removal of rollers.

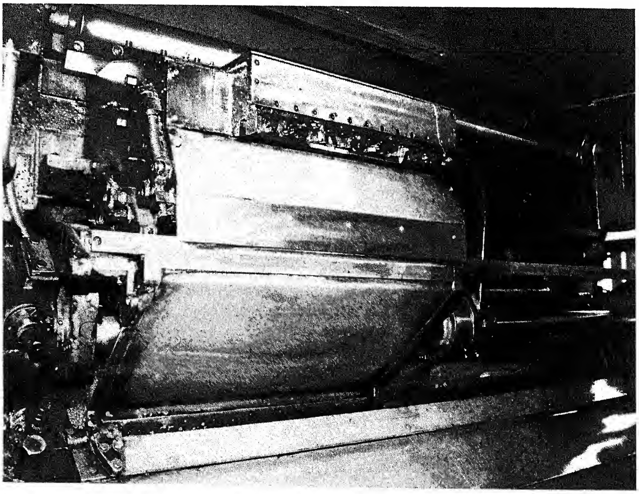


Fig 16 Alternative fudge unit guarding

Figs 17 & 18 Handrails and gates

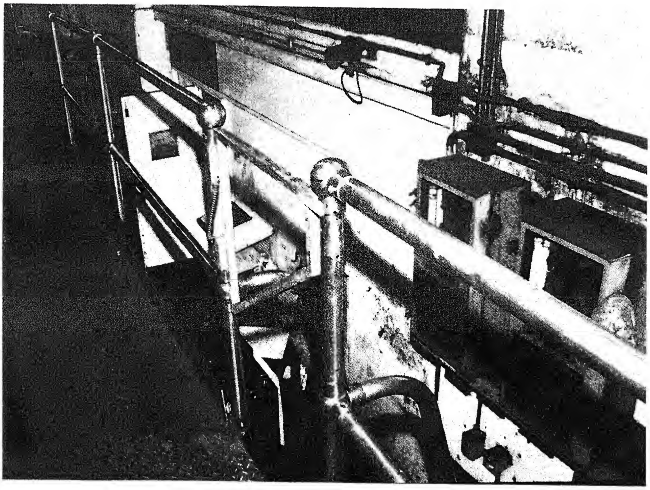
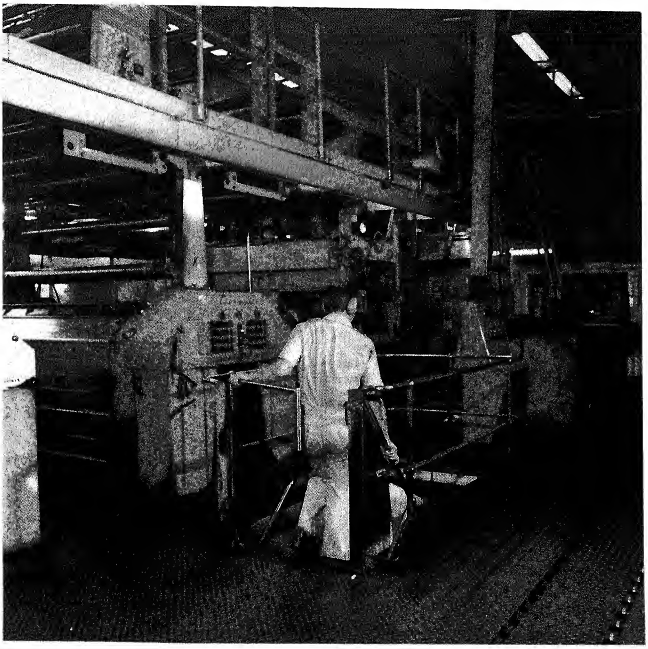


Fig 18



●99 Access ladders should only be provided in cases where a stairway is impracticable, and should have flat treads. Ladders should be distinguished from stairways by angle to the horizontal. The former being equal to or greater than 65° and the latter having an angle of or less than 50°. The Engineering Equipment Users Association (EEUA) handbook *Factory stairways, ladders and handrails* states that between these two angles there lies an accident prone area (See Appendix 1, reference 32).

100 The provision of gates at openings in the handrails of upper platforms should be in accordance with the following:

(a) if the stairway or ladder is at right angles to the press line and access from the stairway is directly through the handrailing, a gate should be provided;
(b) where the stairway is parallel to the press and emerges through an aperture in the upper platform, a gate should be provided together with a handrail with centre rail and toeboard around the other three sides;
(c) where the stairway is parallel to the press and there is a landing on the top of the stairway at the break in the platform handrailing, no gate need be provided;
(d) on stairways parallel to the press line which connect one level of platform to another and there is no break in the handrail, no gates should be supplied.

●101 The use of monkey poles should be avoided, although there may be exceptional circumstances on existing presses where their use is necessary.

●102 Adequate headroom should be provided at all stairways, gangways and where reasonably practicable at all working platforms.

103 Floors, walkways, steps and platforms should be covered with a material designed to be non-skid, e.g. patterned steel plate flooring which is not worn. Where this type of surface has become smooth due to wear, or on other surfaces where there is a risk of slipping, consideration should be given to laying down a non-skid finish, for example, carborundum particles suspended in epoxy resin.

104 Suitable footwear should be worn by those working in the machine room and other places where there may be a risk to the feet (e.g. magazine room, reel store, foundry). Footwear that does not afford any protection to the feet, for example plimsolls, or sandals should be avoided.

Housekeeping in the press room

105 The spread of oil from machine gear cases etc should be rigorously controlled.

106 Arrangements to deal with spills of oil and ink should be made to avoid the risk of injury through slipping.

107 In litho press rooms, plates once removed from the press, must be taken away, and not left on the floor, nor propped up against machinery, walls etc.

Systems of work

108 A written procedure covering safety precautions during webbing-up of the printing presses should be prepared following consultation with press crews and safety representatives. The procedure should be issued to press crews and copies should be displayed in the machine room.

●109 On new presses a safe webbing up procedure and the means for safe webbing up should be provided by the machine manufacturer as part of his obligations under Section 6 of the Health and Safety at Work Act. This should not preclude the preparation and implementation of alternative procedures by management and appropriate safety representatives if such alternative procedures better suit the circumstances at the plant and provide an equivalent level of safety.

110 Any system of work should cater for the different web paths, including paths through colour satellite units and through the folder involving cross association if appropriate. It should also deal with the use of part width webs, e.g. preprints where it may not be possible to use leading-in tapes or chains. The written procedure should include a sketch of the press showing the stages in the webbing up process (See Appendix 4 for examples of a written webbing up procedure).

111 On web offset presses, webbing up should be done with the press stationary by opening cylinder nips and passing through the web with tapes or chains, or manually, where they are not provided.

112 On old presses, or machines not provided with tapes, the practice of tucking in or attaching the web to the cylinder with adhesive tape should be used so that operators can withdraw and stand away from the press when it is inched.

113 A written procedure covering safety precautions during such procedures as plating up, cleaning and press handling should be prepared following consultation with press crews and safety representatives. The remarks made under paras 108 and 109 apply.

114 Training instructions on safe systems of work in press rooms should be set out so as to indicate that the first job is to see that the STOP LOCK button is *in*. The person who depresses a STOP LOCK button should be the person to release it. However, when personnel changes occur an effective handover procedure should be operated.

Press controls

115 Stop buttons should be mushroom shaped and coloured red, and of the push to lock type (STOP LOCK), i.e. push to lock, and turn to release. Turn to lock types are acceptable on existing presses.

Figs 19 to 23 Sequence showing webbing up procedure

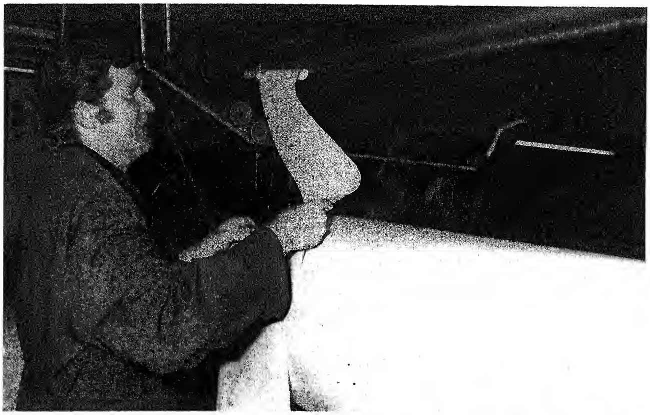


Fig 20

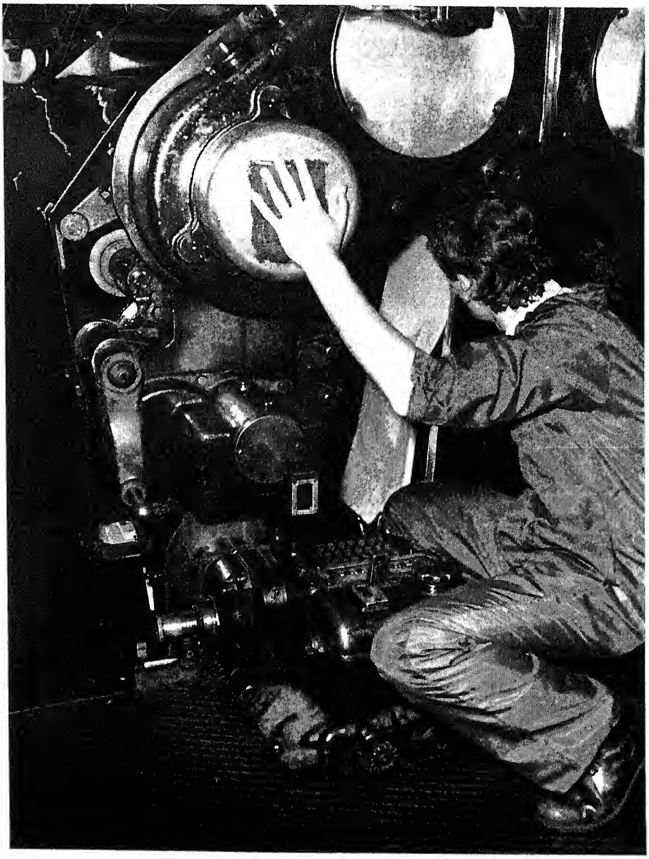


Fig 21

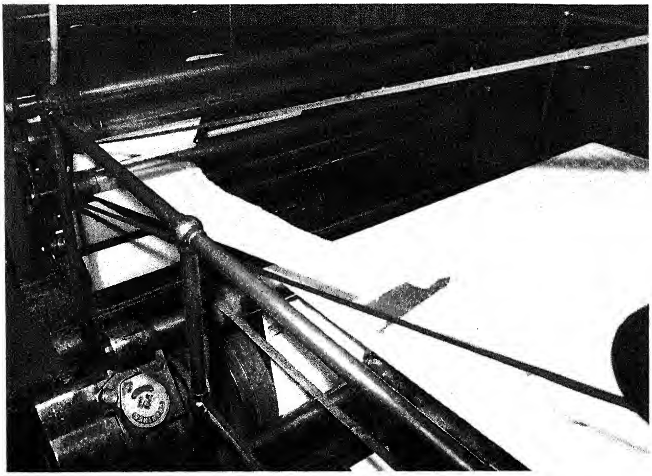


Fig 22

116 There are several methods of arranging indicator lights in common usage. It is intended that the following arrangement should become the standard:

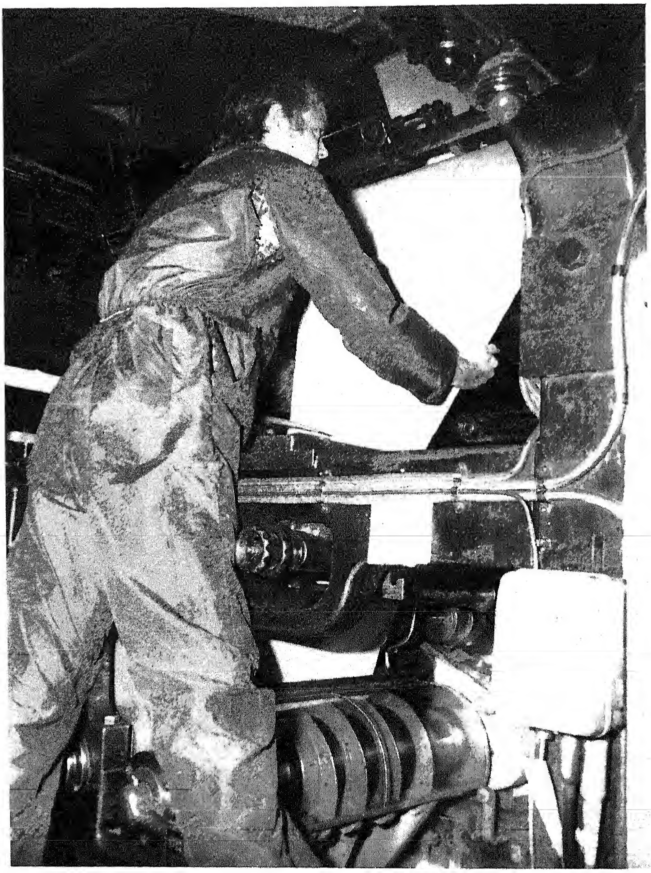
(a) when depressed, the STOP LOCK button on a unit should cause the lights on that unit to change from red to continuous green. The indicator lights on the other units on the same press should show no change, i.e. remain red. If a STOP LOCK button elsewhere on the same press (e.g. folder) is depressed there should be an indication on the remote console (main panel) but the unit indicator lights should show no change (i.e. remain red);

Also acceptable in existing plants is the following:

(b) when depressed, the STOP LOCK button on a unit should cause the lights on that unit to change from red to flashing green. The indicator lights on the other units of the same press should change from red to continuous green;

(c) as in subpara (b) but with continuous green and flashing green interchanged.

Fig 23



117 On existing presses not conforming to para 115 and 116 standards the controls should be improved if reasonably practicable (subject to paras 68 to 73).

118 As a minimum, the colours of indicator lights should be brought into conformity (i.e. green for safe and red for danger) as soon as possible.

●119 Double width press units should be provided with four control boxes including stop lock buttons (see para 126), one at each corner of each unit. Single width press units should be provided with a minimum of two control boxes, sited on opposite corners of each unit.

120 Strategically placed STOP LOCK buttons should be provided elsewhere on the press, for example at the upper bars and pipe rollers.

121 In general, controls should be clearly marked, properly maintained and situated so that the operator can have a clear view of the folder and adjacent units.

■122 Automatic means should be provided such that there is an audible warning followed by a delay of between two and three seconds before the press moves after depressing the inch/crawl or run button. The controls may be arranged so that an initial operation of the inch/crawl is accompanied by an audible warning and time delay. However, if the inch button is depressed again within two seconds this subsequent operation of the inch button need not be accompanied by an audible warning or time delay. In this report, applicable only to the newspaper industry, the term 'inch button' means deadmans crawl button, i.e. if held depressed the inch button will cause the press to crawl continuously (See Appendix 2, technical terms).

●123 It is preferable that audible warnings have different tones or sounds on neighbouring presses, and be accompanied by visual warnings, for example a flashing red light on the panel, or dimming of local press lighting.

●124 Clutches used for disengaging the drive to press units should be provided with interlocks which render the controls on a 'dead' unit ineffective.

125 Arrangements of STOP LOCK buttons, lights and controls etc should be standardised in each plant.

●126 The layout of the control boxes on each unit should be as follows:
Lights and controls vertically disposed in a line in the following manner, from top to bottom: red light, green light, inch button (flush), reverse inch (with flap or deep shroud), any other buttons (e.g. plating button or tape controls), STOP LOCK button (red mushroomed of the 'push to lock' type), with good separation between the latter two.

●127 At the remote or folder console the main controls should be grouped separately from ancillary controls. Main controls are the inch, crawl, speed up, slow down and stop controls. Reverse inch or reverse crawl controls should not be provided at the remote or folder console.

●128 Complex colour coding of control buttons is not considered desirable. The number of colours should be kept to a minimum to reduce the possibility of confusion which might occur due to the profusion of colours or because ink contamination has obscured the colour of a control. It is suggested that only red, green and black are used.

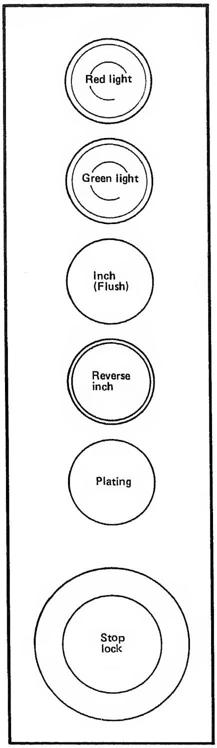


Fig 24 Press unit control box

Publishing Room

129 The types of conveyors and design of counters, stackers, tyers and strappers vary very considerably. It would not be practicable to give specific advice on each particular type.

130 Effective means for stopping newspaper conveyors which enter the publishing room should be provided for use in emergencies. Where dump gates are provided at folders to divert copies, the conveyor leading to the publishing room can be stopped without stopping the press. This is preferable, but where dump gates at the folder cannot be fitted it may be necessary to provide stop buttons in the publishing room which stop the press as well as the conveyor where these are mechanically linked. There should be a light in the press room to indicate which stop button in the publishing room has been depressed. Normal stopping of the press should always be carried out from the press room, and a signalling system should be provided so that publishing room staff can request that the press is slowed down or stopped.

131 Counter stackers should be provided with guards at the infeed and delivery as well as on the machine itself. Where these guards have to be opened by operators they should be interlocked to the counter stacker drive. Otherwise they should be fixed in position by means requiring the use of a tool for their removal or opening (see para 67 for the standards applying to fixed guards).

132 Conveyor fed automatic string tyers and strappers may be divided into two groups:
(a) those with low pressure clamps incapable of inflicting injury; and

(b) those with high pressure clamps.
In the latter category come most of the string tying machines.

133 It is not intended to deal in detail with hand-fed tying or strapping machines not fitted with clamps. Where guarding of the tying mechanism is practicable, it should be provided. Foot operated machines should have shrouded pedals.

134 Machines in category (b) with high pressure clamps should be provided with a combination of interlocked and fixed screen guards which prevent access from the infeed and delivery and are sufficiently high to prevent access over the top. Where the operator must obtain periodic access for clearing jams and replacing string etc the guards should be interlocked. In all other cases guards should be fixed as defined earlier.

135 Lift off guards are not satisfactory unless interlocked. If a lift up section of conveyor is provided between the underwrapper and strapper/tyer it should be so arranged that access to dangerous parts is not possible when the gate conveyor section is raised e.g. by interlocking.

136 Some strapping machines have force limiting devices on the clamp as well as a resilient rubber facing for the clamp and have no other associated dangerous parts. Gravity fall, crucifix turn devices can become dangerous when laden and screen guarding should be fitted. This may require interlocking if access to other dangerous parts is possible. Where reliance is placed on force limiting devices, for example, slipping clutches, or pressure reducing valves, these should be tested weekly or as recommended by the manufacturer to ensure that the clamping force is not at a

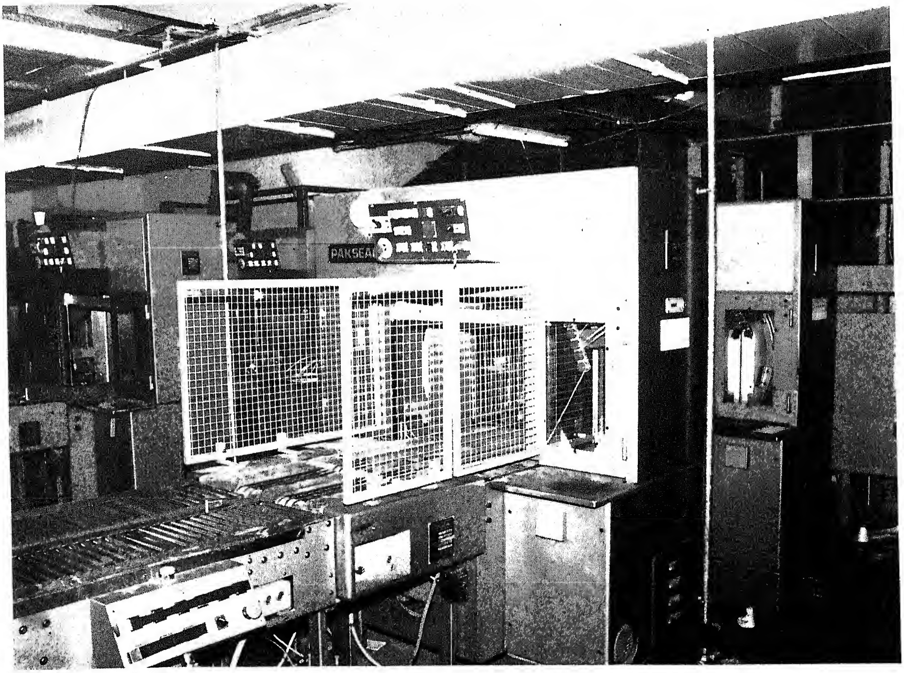


Fig 25 Strapping machine guarding – guard closed

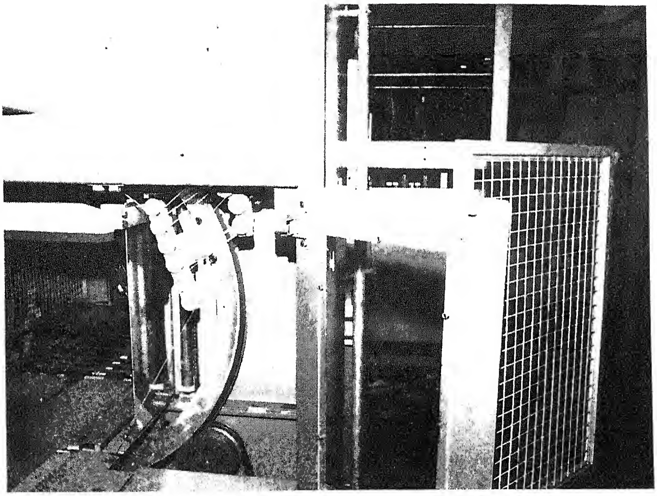


Fig 26 Interlocked hinged guard open

dangerous level. This test should be made using a load cell pressure gauge or other suitable instrument.

137 The dangerous moving parts of shrink-wrapping machines and any associated hot surfaces should be suitably guarded. Moving parts creating danger include roller conveyors, sheet feeding and cutting mechanisms. Fumes from shrink wrapping machines should be removed by suitable ventilation.

138 Safe means of access to elevated parts of the publishing room must be provided, and mezzanine floors and platforms should have adequate handrails and toeboards. See EEUA Booklet (Appendix 1). Properly designed and safe means for crossing through or over conveyor lines should be provided.

139 Where newspaper conveyors enter the publishing room from below, adequate barriers and toeboards should be erected around the conveyor and floor opening. Every endeavour should be made to prevent dust coming up from the machine room into the publishing room.

140 The recommendations made in paras 41 to 43 under vehicle movements and under para 94 are relevant to the publishing room.

Maintenance

141 Plant and equipment should be properly maintained as required by Section 2 of the HSW Act. It is strongly recommended that a planned preventative maintenance scheme be drawn up at each factory and that items affecting health and safety receive special attention in this, for example checking of guards, interlocks and extraction systems, the internal cleaning of ducts to reduce the hazard of fire, and the changing of dust filters.

142 Maintenance of lifting and handling equipment is dealt with in paras 44 to 46.

143 Special attention should be paid to maintenance of vans. If these vehicles are hired the maintenance given to them should be monitored periodically, but this should not be seen to dilute the suppliers' responsibility to provide safe equipment. Drivers should be made aware that under the Road Traffic Act they are liable for certain defects in maintenance, for example, worn tyres, defective steering and brakes etc.

144 Maintenance operations should always be carried out safely and where appropriate safe systems of work should be drawn up, for example, on machinery where special locking off procedures may be necessary, or in confined spaces where there may be danger of fumes, lack of oxygen, steam or mechanical hazards. Special heed should be given to the cleaning of ducts and whever possible this should be done without persons having to enter ducts. If this is necessary, appropriate protective equipment and clothing should be provided, as well as training in its use. See HSE Guidance Note GS 5 *Entry into confined spaces*.

145 Arrangements for safety during maintenance and repair should also deal, e.g., with the lifting of heavy cylinders, rollers, etc, electrical isolation, provision of temporary means of access and operations on moving machinery (the Operations at Unfenced Machinery Regulations 1938 refer).

Fire

146 Fire is one of the greatest hazards in newspaper production due to the highly combustible nature of the newsprint (especially when it accumulates as waste) and the widespread use of flammable liquids. Even minor fires can cause large quantities of pungent smoke and cause difficulties with fire fighting and evacuation. In no circumstances must fire doors be obstructed or wedged open.

147 Cigarette smoking is probably the most common cause of fire and should be prohibited in machine and magazine rooms, publishing rooms, reel store, process department and other places where there is combustible material or flammable liquids. Paraffin soaked rags in the machine room should be placed promptly in lidded metal bins. In the magazine room non-flammable reel paste is preferable (see paras 63 and 64). Under the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972, highly flammable solvents (that is those having a flashpoint below 32°C) must be stored in a fire resisting storeroom, or, if the aggregate quantity in any one workroom is less than 50 litres, in a fire resisting cabinet or bin. When in use, flammable liquids should be kept in spill proof containers if reasonably practicable. A strictly limited quantity of solvent may be used to cope with a localised spillage but cleaning of floors with highly flammable solvent using a mop and bucket should be prohibited.

Training

148 The maintenance of safe, clean, working conditions and accident and fire prevention is everyone's responsibility. Accordingly, training in their health and safety responsibilities should be an integral part of every management, supervisory and specialist training and development programme. The subject should also be included in every induction and job training programme. Companies should nominate a member of management to be responsible for training either as a part time or full time function and health and safety policies should describe the arrangements made for health and safety training. See Appendix 1, reference 37.

149 Induction training should prepare all new employees by explaining the work environment and its safe working practices simply and clearly. All new employees should be trained in accordance with a written training programme which should include instruction on accident and fire prevention, means of escape, and health hazards.

150 Training presents special difficulties in newspaper production when significant numbers of casuals are employed. Regular casuals should be included in the company's induction and job training programme. It is recognised that where non regular casuals are employed there are difficulties in ensuring effective safety training. Careful consideration must be given to the legal obligations of Section 2(2)(c) of the HSW Act.

Health and the general environment

151 It is not possible in this report to give detailed advice on health hazards but it would be wrong to consider the mechanical dangers in newspaper production without drawing attention to the dangers to health.

152 Numerous substances are used in newspaper production in composing and process departments, platemaking/foundry, press rooms and other areas. Employees may be exposed to potentially harmful materials in the form of dust, fume, vapour or liquid in all these areas as well as the publishing room, ancillary areas like workshops, boiler room and also vanways and offices. Many chemical materials are potentially dangerous and manufacturers and suppliers of substances are required by law to make available to customers information and advice about potential hazards and the precautions necessary for safe use. Such information should be considered by employers to ensure its adequacy, bearing in mind the way in which the material will be used. Copies of health and safety information from suppliers should be made available to safety representatives and adequate information should be made available to all employees in order to meet the requirements of Section 2(2)(c) of the HSW Act.

153 Good standards of industrial hygiene and safe working practices are essential when handling harmful chemicals. These may be summarised as follows:

(a) contact of chemicals with the skin and eyes should be avoided and, depending on the hazard and likelihood of contamination, it may be necessary to provide and wear suitable protective clothing (gloves, eye protection, aprons and/or overalls);

(b) if reasonably practicable, manual handling operations should be avoided and a good example where this can be achieved is in the handling of large quantities of nitric acid in process departments where the acid can be conveyed in closed pipelines from a bulk storage tank and disposed of in the same way;

(c) should chemicals come into contact with the skin or the eyes prompt treatment by copious irrigation with clean water is essential. This may be achieved by the

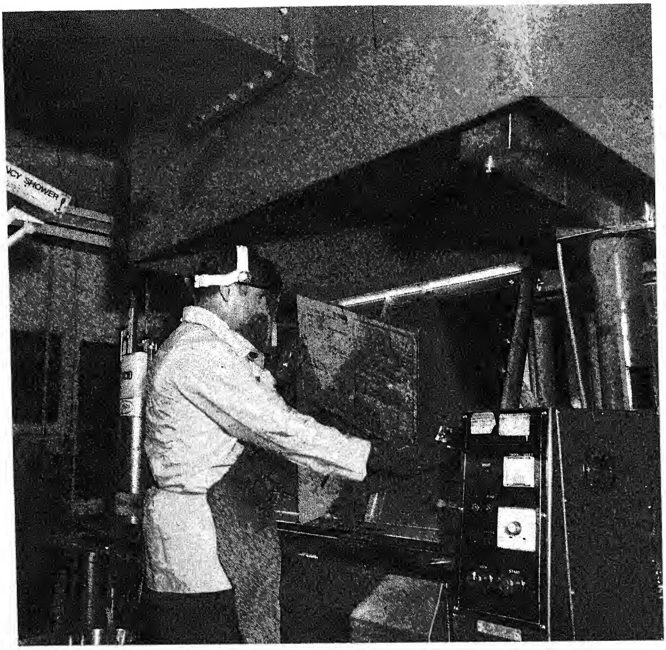


Fig 27 Removing a metal plate from a nitric acid etching bath

provision of eyewash and emergency showers, but where contact with the eyes has occurred medical attention should be sought without delay;

(d) ingestion of chemicals, including lead, should be scrupulously avoided. No food or drink should be brought, stored, prepared or consumed in areas where chemicals are used. Consumption of tea or coffee may be allowed in low lead risk areas such as composing rooms, provided it is prepared in areas so sited that there is no possibility of contamination. Smoking should be prohibited in all areas where lead and/or other chemicals are used;

(e) inhalation of chemicals in the form of dust, powder or vapour should be avoided. Toxic materials should be controlled by enclosure, ventilation or other means to prevent their escape into the atmosphere of the workroom, but where this is not practicable personal protection should be used. The use of aerosol sprays should be avoided if possible;

(f) an adequate supply of necessary protective clothing and equipment should be available;

(g) washing facilities for regular and emergency use should be available where chemicals are stored and used;

(h) all employees should be advised on the need to wash before eating, smoking or using the lavatory;

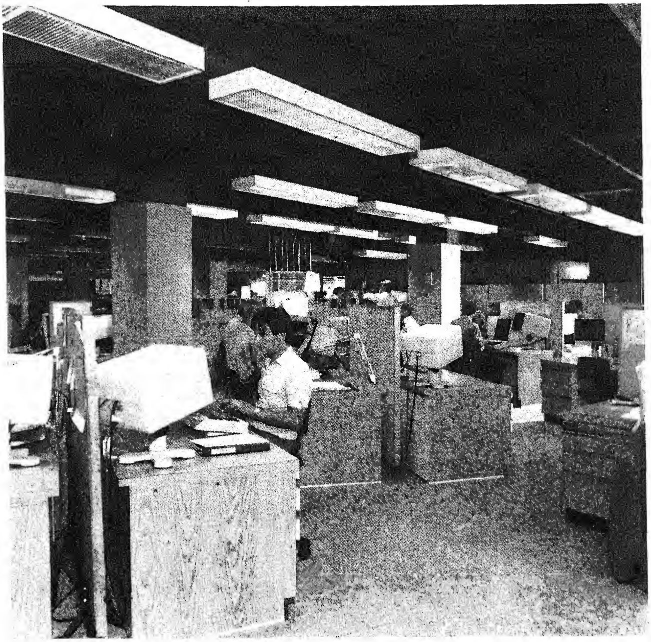
(i) chemicals should be stored and measured out in well ventilated areas and any spillage should be cleared up immediately.

156 Containers should be clearly marked and labelled. The suppliers have a duty under Section 6 of the HSW Act and the Labelling and Packaging Regulations to provide adequate labelling. If chemicals from a larger container are broken down into smaller quantities, the small containers should be labelled with safety information similar to the original containers. However, labelling alone may not provide sufficient information to enable an employer to meet his duties to his employees and the need to provide additional information should be considered.

157 Chemicals should be transported in a safe manner. Internal transport of chemicals should be in closed containers. There are regulations governing the conveyance of chemicals by road.

158 Adequate first aid facilities must be available during all working hours. The minimum legal requirements are contained in the Health and Safety (First Aid) Regulations 1981 which came into force on 1 July 1982. Employers should be encouraged to provide the best facilities possible. Reference may be made to Health and Safety Series Booklet HS(R) 11 *First aid at work*. In large plants it may be appropriate that a nurse with an occupational health qualification is available for treatment or advice.

Fig 28 Modern photo-typesetting department with visual display units in operation



159 It is recommended that a medical practitioner should be available for advice on matters pertaining to occupational health. Medical advice should be sought on such matters as biological monitoring and preemployment screening for the selection of people for specific jobs, for example for lift truck drivers.

160 The company health and safety policy should deal adequately with the provision of occupational health services.

Checklist

161 It is not possible in this report to describe the health hazards in every stage in the production of a newspaper, but the following table may assist in drawing attention to certain hazards. Inclusion on the list does not necessarily imply that the material concerned is hazardous. The list is intended to stimulate management and employees to examine possible problems in the various areas of production. Surveys should be carried out at regular intervals, with professional assistance if necessary. Problems will vary in scale and nature from premises to premises, and solutions are likely to be unique to the plant concerned.

162 It should be stressed that chemicals suppliers have a legal duty to provide detailed information (paras 152 and 156).

Table 1 Hazard checklist

Process or area	*Hazard checklist*	*References See Appendix 1*
Composing by hot metal	Lead dust, lead oxide dust in dross	38 to 41
	Solvents used for matrix cleaning	*
	Refiners used during drossing	*
Photocomposition	Film processing chemicals	*
	Solvent based adhesives used in paste up	43
	Visual display units (VDU)	50,51
	Humidifiers (micro-organisms)	52
	Aerosols	
Photographic areas	Film processing chemicals	*
	Acetic acid	
	Silver recovery units	
	Resists	
	Retouching chemicals	
Process department	Acids (nitric, phosphoric, hydrochloric)	
	Solvents (may be flammable and/or narcotic and/or toxic e.g. trichloroethylene, III trichloroethane, methylene chloride, acetone, methylated spirits)	* & 43
	Ultra violet lamps	53
	Light sensitive materials – dichromates and diazo compounds	*
Platemaking (metal)	Lead dust, lead oxide dust in dross	38 to 41
	Talc	
	Refiners used during drossing	*
Platemaking (polymer)	Photosensitive resins (may contain certain acrylates which are skin sensitisers etc)	*
	Cleaning and wash out solvents	*
	Antistatic solvents	*
Platemaking (litho)	Process chemicals (depends on make and process used)	*
	Ultra violet lamps	53
Press room (letterpress)	Ink fly	
	Solvents (paraffin, white spirit)	
	Paper dust	
	Humidifiers	52
Press room (litho)	Wash up solvents (depends on make)	*
	Blanket restorers and dried ink solvents	**
	Paper dust	
	Gumming solutions	*
	Plate correction materials (if used)	*
	Fount solutions	
	Humidifiers	52
Magazine room	Paste	
	Humidifiers	52
Publishing room	Paper dust	
	Fumes from shrink wrapping and plastic tape welders	
	Fumes from vanways	
	Paste	
Vanways	Vehicle exhaust fumes	
Maintenance etc	Duct cleaning (lead, ink, drossing additives)	
	Cleaning solvents	*
	Asbestos lagging	46,47,48
	Lubricants	

* consult makers data sheets

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7 *Lighting in printing works* (British Printing Industries Federation)

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11 *Notes for the guidance of designers in the reduction of machinery noise* Technical Data Note 12 (HSE, out of print)

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44 Guidance Note EH 18 *Toxic substances: a precautionary policy* (HSE)

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Appendix 2 Some technical terms used in the printing industry

As far as possible the technical terms used in the report conform to British Standard BS 3814 : 1964, *Glossary of letterpress rotary printing terms*

A **Anglebars** – bars set at an angle to transfer one or more ribbons of paper over each other, or the web from one side of the press to the other or at right angles to its previous flow
Arch – the middle of a conventional letterpress unit
Autopaster – equipment for attaching a new reel of paper to the old web whilst the web is still running, synchronising the speed of the new reel with the web which is then severed (also automatic reel change, flying paster)

B **Bars** – free running rollers (see also anglebars, turnerbars)
Bat – device for breaking down reels which are stacked horizontally several reels high on a lorry or in a store
Bays – spaces in vanways for loading
Bay window – method of allowing web to be relocated prior to sheets being collected above the folder. Involves web coming out of the line of the press and re-entering it
Bending rollers – rollers in a printing press folder at the point or nose of the former
Black plates – used letterpress plates which are returned to the foundry for melting
Blanket cylinder – in offset litho printing this cylinder transfers or offsets the image from the plate cylinder to the paper. The blanket is the rubber sheet covering the cylinder. In letterpress the impression cylinder may be referred to as the blanket cylinder and is a cylinder against which the paper or other material is passed to receive the impression of the inked printing plate
Bogie – a truck for transporting a reel of paper (also dolly truck, reel truck)
Bosses – see propellers
Bridge – see subtruck
Brush arms – part of the auto paster mechanism. The brush presses the running web against the new reel when the join is made on an automatic reel change

C **Captive tapes** – tapes used to thread the web through the press which are operated only at slow speed and declutched before speed up (see tapes)
Casual – a person working under a casual employment system operating in some national newspapers. May be a regular casual (part time worker) or non-regular casual, so called casual casual
Chains – device for webbing up a press (see tapes)
Clamp truck – specially equipped lifting truck for reel movement
Copy – a newspaper
Crawl – the continuous turning of a press at slow speed for make ready when guards may be open under certain circumstances. Normally initiated from the main console (see inching)
Cross association – the placing in position of slit webs or narrow strips of associated numbers of webs across the folder prior to finishing operations. A tandem folder is used in which two neighbouring sets of folders and draw rollers feed one set of cutting and folding cylinders
Cylinder – a large diameter roller, normally confined to plate, blanket or impression cylinders

D **Deadmans control** – a control which has to be held against the force of a spring and which if released, automatically returns to the off position
Di-litho – direct litho, a method of converting a letterpress press to litho without having to add cylinders (i.e. blanket cylinders)
Diverter – a device on a publishing room conveyor
Dogs – bevelled clips which slide in grooves on the plate cylinder holding the plates firmly in position

Draw rollers — a pair of rollers usually both driven which control the tension of the web, often in the folder

Dump gate — a device located on the conveyor from the press for diverting copies in the event of a stoppage in the publishing room

F **Flong** — sheet of papier mache which after moulding is used for casting stereo plates

Fly — delivery position of folder

Flying paster — see autopaster

Folder — part of printing machine for converting several webs of paper into cut and folder newspapers

Former — the triangular metal plate above the folder above which the web is folded in a lengthwise direction

Free sheet — free issue newspaper containing mainly advertisements

Fudge — the mechanism for printing items after the press has been plated up, e.g. the late news or stop press news on newspaper printing presses. A fudge is a miniature plate or assembly of linotype slugs

Forme — printing master locked up in a chase ready for moulding or printing

I **Igranic** — proprietary name for a slow moving wire conveyor, usually for transferring newspapers from folder to publishing room

Inching — turning the press very slowly by smaller amounts under power. Deadmans crawl, usually initiated from the unit (the definition is different in general commercial printing)

Interfolder — the bars, pipe rollers and slitters above the former and RTF.

Interlocked guard — a guard fitted with an electrical or other device which prevents a machine being set in motion (except possibly on crawl) when open, and which cuts off power to the machine when opened during the run

K **Kite** — see former

L **Lift** — end of printing run when used plates (black plates) are removed (lifted) from the press

Lowerator — a device used for lowering reels of paper from one floor to another, usually ground floor to basement reel store

M **Machine room** — room containing the printing presses at unit level

Magazine room — room below machine room containing the reel stands of the printing presses (mag room)

Monkey poles — poles used as ladders with protrusions or cross bars for foot and hand hold

Moulding — process by which heat and pressure is used to produce a flong from a forme ready for insertion in the stereo casting machine

Matrix — individual brass piece of type in negative form for use in typecasting machine, e.g. linotype or monotype

N **Newspaper** — see para 14

Nose guard — a short guard covering the bending rollers forward from the nose of the former

O **Offset** — term usually applied to offset lithographic printing in which the printed image is offset or transferred from the plate cylinder to the blanket cylinder and then to the paper

P **Paddles** — the rotating curved or shaped fingers of the fly which transfers the copies from the folder to the delivery belts

Paddle — device for breaking down reels stored horizontally, see bat

Paste — adhesive for joining end of spent reel to lead of new one

Perfecting —printing both sides of the paper as it passes through the press

Pipe roller — free running roller

Plate — the metal, plastics or rubber etc material upon which a printing image has been produced

Plate cylinder — the cylinder in a printing unit to which printing plates are fixed

Plating up — the action of securing printing plates to the printing cylinder

Polymer plate — letterpress printing plate produced from liquid polymer resins which are selectively hardened

Preprint — reel with colour preprinted elsewhere; enables mono colour press to produce partly coloured newspaper

Press — set of printing units and folder which collectively can print a newspaper or other product

Propellors — individually mounted rollers, draw rollers or bosses, with independent adjustment and peripheries of rubber or synthetic substance or of knurled metal. They usually operate in conjunction with a driven roller to assist it to control the webs (also propellors rollers, bosses)

Publishing room — despatch department where papers are counted, stacked, and tied or wrapped. Also known as warehouse

Q **Quire** — a predetermined number of copies (newspapers) e.g. 20 or 25

R **Reel stand** — the structure for supporting the reel, or bringing it into position or both

Register bars — pair of parallel free running rollers, sometimes serrated which can be used to vary register by altering the angle of their plane to the web

Register — degree of coincidence of images printed by separate printing plates. The location on the press of one printing plate or operation in relation to another

Roller — small diameter cylinder, e.g. inking roller, draw roller, pipe roller

Rotary press – a press that prints from a curved plate rather than a flat printing surface. Often applied to a web fed press

RTF – abbreviation of roller top of former; the roller immediately above the former. A serrated power driven roller which may be found in the inter folder as well

S

Saddle – solid, removable part of plate cylinder, usually used on letterpress presses converted to polymer or litho plates

Safe button – stop button – red mushroomed shaped button of push to lock type and turn to release

Seal – a small printing plate usually used to indicate the edition of a newspaper or the motif, e.g. title of newspaper in red (See fudge)

Severer – serrated knife at base of arch for cutting web following break – to prevent wrap around

Shrink wrap – heat shrunk plastic film wrapping used in some publishing rooms

Spider – a multiple arm structure supporting reels of paper mounted on the reel stand of a press unit

Spindle – found on some reel stands. The shaft that extends through the core of a reel of paper for running in a reel stand

Stereo foundry – department where letterpress metal plates are cast

Stereo metal – alloy composed chiefly of lead with antimony, tin and other metals

STOP LOCK button (also known as safe, or safe button qv)

Strapping – securing bundles of newspapers with plastic tape; the loop is formed by welding or a metal clip (see tying)

Sub truck – movable platform in the pit under the reel stand to assist in loading reels onto the spiders (also tray, transfer table)

T

Tapes – a device to aid webbing up of a press, may be operated by a clutch (captive tapes) or continuously running (see 'chains' and 'captive tapes')

Topping barrows – table like trolley used in the reel store for stacking reels two layers high

Tray – see sub truck

Turner bars – see anglebars

Tying – securing bundles of newspapers by string tying, may be mechanised or by hand

Type setting – the assembly of type

U

Underwrapper – publishing room machine located ahead of strapping or tying machine which inserts a sheet of heavy paper under the bundle

Unit – individual perfecting unit of a press

V

Vanway – where vans are loaded from the publishing room

Visual display unit (VDU) – cathode ray tube used for display in photo or computer typesetting departments (also **VDT** – visual display terminal)

W

Warehouse – publishing room

Web – paper from reel that has been threaded through the press

Web driven – a roller or other moving part driven by virtue of friction from the passing web

Web offset – web fed offset lithographic printing process

Webbing up – threading the web of paper through the press before printing starts

Windows – discharge point for bundled newspapers from publishing room

Wrap around – paper accidentally wrapped around the impression cylinder, plate cylinder or inking rollers usually occurring from a web break

Appendix 3 Organisations and addresses

Health and Safety Executive
Baynards House
1 Chepstow Place
Westbourne Grove
London W2 4FT
(Incorporating the Factory Inspectorate and the Employment Medical Advisory Service)
Tel: 01 229 3456

Health and Safety Executive
Chancel House
Neasden Lane
London NW10 2UD
Printing National Industry Group (and Secretariat to Printing Industry Advisory Committee)
Tel: 01 459 8855

Newspaper Publishers Association
6 Bouverie Street
London EC4Y 8AY
Tel: 01 583 8132

Newpaper Society
Whitefriars House
Carmelite Street
London EC4Y 0BL
Tel: 01 583 3311

British Printing Industries Federation
11 Bedford Row
London WC1R 4DX
Tel: 01 242 6904

National Graphical Association – NGA '82
Graphic House
63/67 Bromham Road
Bedford MK40 2AG
Tel: 0234 51521

Society of Graphical and Allied Trades – SOGAT '82
274/288 London Road
Hadleigh
Benfleet
Essex SS7 2DE
Tel: 0702 553131

British Standards Institution
Sales Department
101 Pentonville Road
London N1 9ND
Tel: 01 837 8801

Royal Society for the Prevention of Accidents (ROSPA)
Cannon House
The Priory
Queensway
Birmingham B4 6BS
Tel: 021 233 2461

British Safety Council
Chancellors Road
London W6 9RS
Tel: 01 741 1231

TUC Centenary Institute of Occupational Medicine
London School of Hygiene and Tropical Medicine
Keppel Srreet
London WC1E 7HT
Tel: 01 636 8636

Printing Industries Research Association (PIRA)
Randals Road
Leatherhead
Surrey KT22 7RU
Tel: Leatherhead 76161

Institute of Occupational Health
University of Birmingham, The Medical School
PO Box 363
Edgebaston
Birmingham B15 2TJ
Tel: 021 472 1301

Inca-Fiej Research Association (IFRA)
Washingtonplatz 1
D-6100 Darmstadt
Federal Republic of Germany
Telex: 419273

British Federation of Printing Machinery and Supplies
3 Plough Place
Fetter Lane
London EC4A 1AL
Tel: 01 583 7433

Association of Printing Machinery Importers
Fairfax House
Fulwood Place
London WC1V 6DW
Tel: 01 405 8422

Appendix 4 Examples of web up procedure

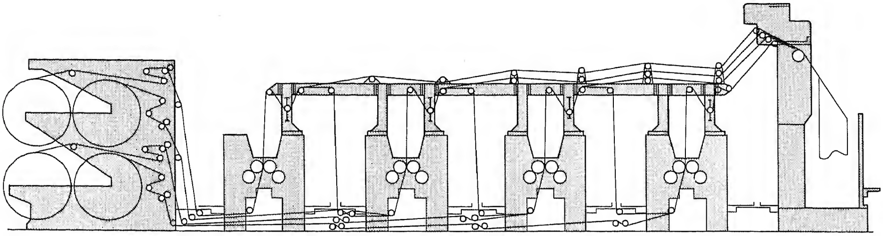

Fig 29 Single width web offset press showing web lead

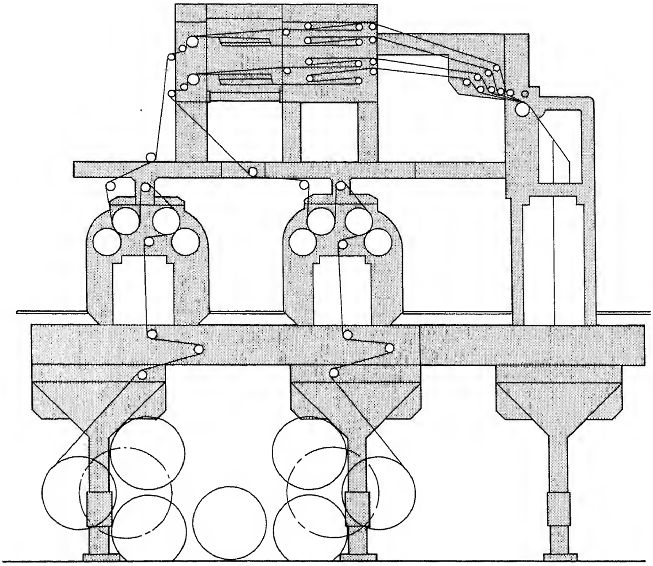

Fig 30 Double width letterpress press showing web lead

Webbing up procedure for single width web offset press without tapes or chains and having end feed rollstands

The following procedure applies to each single web which is being fed into the press (full or half reels).

1 Blanket cylinder impression to off (All leading-in must be done with blanket cylinders thrown off)

2 Load reel of newsprint into rollstand. Do not engage tension brake

3 Engage safe button

4 Manually throw off infeed nip roller

5 Prepare end of web by tapering sheet

6 Lead web manually through rollstand over pipe rollers and tension rollers and over infeed roller

7 Engage infeed nip roller

8 Disengage safe button

9 Operator to depress the inch/crawl push button to drive web forward from infeed; second operator will assist web over pipe rollers leading to base of unit arch

10 Engage safe button

11 Drop brown paper strip between blanket cylinder from above unit to base of unit arch and attach the web

12 Disengage safe button

13 Using inch/crawl button, feed web through blanket cylinder open nip guided by brown paper tape until end of web can be safely held

14 Continue to feed web over pipe rollers to folder RTF

15 Operative should pass web over RTF to another operative standing on the platform at the front of the folder, being aware of the danger of trapping fingers under propeller rollers and between RTF and slitter/propeller mounting bar

16 Second operative should feed paper down the former between the bending rollers and into the folding mechanism

17 When webbing up the folder, and elsewhere if possible, one man should be stationed near a safe button (at various points about the press) to stop the press if required for any reason

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Example of procedure for webbing up press fitted with lead in tape mechanism letterpress machine without turnerbars

The following procedure applies to each single web which is being fed into the press (full, ¾ or ½ reels). Whatever the paper size may be, this procedure should be followed each time.

All audible warning systems must be fully operational before presses can be used. Any failures to be reported immediately to head of the department and faults must be rectified before machines can be used.

A 'safe' must always be engaged by a person working on or within the unit. That person only is responsible for clearing this 'safe'. No person should rely on the 'safe' button engaged by someone else.

1 Load reel of newsprint into the roll stand

2 See that no clothing is loose, i.e. ties, cuffs, etc

3 Ensure press is stationary with safe button engaged

4 Prepare end of web by tapering the sheet; fold and place in tape feed

5 Disengage safe button

6 Start press on crawl speed ensuring that tape feed is engaged

7 The tape feed will then carry the tapered web over tension pipe rollers at the reel stand, on and through the press unit to the RTF*; the web may be manually assisted from outside the press unit arch, but if entry into the unit arch is required the safe button should be engaged

8 Operative should pass web over RTF to another operative standing on the platform at the front of the folder, being aware of the danger of trapping fingers under propellor rollers and between RTF and slitter/propellor mounting bar

9 Second operative should feed paper down the former between the bending rollers and into the folding mechanism

10 Additional assistance may be required at various positions including the former for the purpose of feeding the web through to the folder; if the first attempt is unsuccessful the safe button should be engaged and the sheet torn off at the former; repeat procedure; the web should not be assisted by hand through the folder (i.e. anywhere underneath the bending rollers) with the press in motion

11 When webbing up the folder, and elsewhere if possible, one man should be stationed near a safe button (at various points about the press) to stop the press if required for any reason

12 If the sheet breaks during the run, the normal tape lead in procedure should be undertaken; depending on where the web breaks, the necessary subsequent web lead in procedure should be followed; in particular, when rewebbing up the printing units no attempt should be made to hand insert the web into the cylinders from within the printing arch with the press in motion

13 Disengage the tape feed

The above procedure should be carried out on all units to be webbed depending on the size of newspaper to be printed that day

All guards should be closed before starting the run

* On a press fitted with turner bars, the web may need assistance in the upper parts of the press.

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